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Terms: **37552** ([Edit Search](#))

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986327 (08) RE 37552 February 19, 2002

UNITED STATES PATENT AND TRADEMARK OFFICE GRANTED PATENT  
RE **37552**

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February 19, 2002

System and method for power-efficient charging and discharging of a capacitive load from a  
single source

**INVENTOR:** Svensson, Lars - Lund, Sweden (SE); Athas, William C. - Torrance, California;  
Koller, Jeffrey G. - Torrance, California

**APPL-NO:** 986327 (08)

**FILED-DATE:** December 5, 1997

**GRANTED-DATE:** February 19, 2002

**ASSIGNEE-AT-ISSUE:** University of Southern California, Los Angeles, California, 02

**LEGAL-REP:** Oppenheimer Wolff & Donnelly LLP

**PUB-TYPE:** February 19, 2002 - Reissue Patent (E1)

**PUB-COUNTRY:** United States (US)

**REL-DATA:**

Reissue of: 08/231637, April 22, 1994, PENDING 05473526, December 5, 1995

**US-MAIN-CL:** 363#60

**US-ADDL-CL:** 307#109

**CL:** 363, 307

**SEARCH-FLD:** 365#60, 365#61, 365#58, 365#59, 320#166, 307#110, 307#109, 307#106

**IPC-MAIN-CL:** 7H 02M003#7

**PRIM-EXMR:** Berhane, Adolf Deneka

**REF-CITED:**

[3603898](#), September, 1971, Dawson, United States (US), 328167

[3654537](#), April, 1972, Coffey, United States (US), 320001

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1/1 PLUSPAT - (C) QUESTEL-ORBIT

PN - USRE37552 E1 20020219 [USRE37552]

TI - (E1) System and method for power-efficient charging and discharging of  
a capacitive load from a single source

PA - (E1) UNIV SOUTHERN CALIFORNIA (US)

PAO - University of Southern California, Los Angeles CA [US]

IN - (E1) SVENSSON LARS (SE); ATHAS WILLIAM C (US); KOLLER JEFFREY G (US)

AP - US98632797 19971205 [1997US-0986327]

FD - Reissued: US231637 19940422 [1994US-0231637]

- Reissue of: US5473526 - 19951205

PR - US98632797 19971205 [1997US-0986327]

- US23163794 19940422 [1994US-0231637]

IC - (E1) H02M-003/07

EC - H02M-003/07

PCL - ORIGINAL (O) : 363060000; CROSS-REFERENCE (X) : 307109000

DT - Basic

CT - US3603898; US3654537; US4082430; US4107757; US4109192; US4328525;  
US4594589; US4605999; US4707692; US4802739; US4818981; US4862113;  
US4893117; US4920474; US5051668; US5063340; US5095223; US5105288;  
US5107136; US5126589; US5150013; US5206632; US5247376; US5264752;  
US5293082; US5339236; US5349366; US5459414; US5465054; US5473269;  
US5473526; US5506520; US5508639; US5510748; US5517145; US5521538;  
US5526319; US5528256; US5559463; US5559478; US5572211; US5578957;  
US5602497; US5604449; US5604454; US5657039; US5675263; US5694445;  
US5734285; US5748165; US5754156; US5818252; US5821923; US5838203;  
US5838289; US5841299; US5852426; US5861861; US5870331; US5880602;  
US5881014; US5883538; US5889439; US5892540; US5896117; US5900854

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STG - (E1) Reissue Patent

AB - A system and method for efficiently charging and discharging a capacitive load from a single voltage source. The system includes a first switch for selectively connecting the voltage source to the load and a second switch for selectively providing a short across the load as may be common in the art. A particularly novel aspect of the invention resides in the provision of plural capacitive elements and a switching mechanism for selectively connecting each of the capacitive elements to the load whereby the load is gradually charged or discharged. In the illustrative embodiment, the switching mechanism includes a set of switches for selectively connecting each of the capacitive elements to the capacitive load and a switch control mechanism for selectively activating the switches.

UP - 2002-09

1/1 LGST - (C) LEGSTAT

PN - US 37552 [USRE37552]

AP - US 986327/97 19971205 [1997US-0986327]

DT - US-E

ACT - 19971205 US/AE-A

APPLICATION DATA (PATENT)

{US 986327/97 19971205 [1997US-0986327]}

- 20020219 US/E1 [+]

REISSUE (PRE-GRANT)

UP - 2002-10

1/1 PAST - (C) Thomson Derwent

AN - 200208-001530

PN - 5473526 A [US5473526]

3/4/03

RE 37,552

09/758631

DT - A (UTILITY)  
OG - 2002-02-19  
CO - RE  
ACT - REISSUE PATENT  
SH - REISSUE PATENT  
RL - USRE37552

Search statement 3

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Search statement 2

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1 Patent Groups  
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Search statement 3

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1/2 INPADOC - (C) INPADOC  
PN - US 37552 E1 20020219 [US--37552]  
TI - SYSTEM AND METHOD FOR POWER-EFFICIENT CHARGING AND DISCHARGING OF A  
CAPACITIVE LOAD FROM A SINGLE SOURCE  
IN - SVENSSON LARS [SE]; ATHAS WILLIAM C [US]; KOLLER JEFFREY G [US]  
PA - UNIV SOUTHERN CALIFORNIA [US]  
AP - US 986327/97-A 19971205 [1997US-0986327]  
PR - US 986327/97-A 19971205 [1997US-0986327]  
- US 231637/94-A5 19940422 [1994US-0231637]  
IC - H02M-003/07

2/2 INPADOC - (C) INPADOC  
PN - US 5473526 A 19951205 [US5473526]  
TI - SYSTEM AND METHOD FOR POWER-EFFICIENT CHARGING AND DISCHARGING OF A  
CAPACITIVE LOAD FROM A SINGLE SOURCE  
IN - SVENSSON LARS [US]; ATHAS WILLIAM C [US]; KOLLER JEFFREY G [US]  
PA - UNIV SOUTHERN CALIFORNIA [US]  
AP - US 231637/94-A 19940422 [1994US-0231637]  
PR - US 231637/94-A 19940422 [1994US-0231637]  
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1/1 LEGALI - (C) LEGSTAT  
PN - US 5473526 [US5473526]  
AP - US 231637/94 19940422 [1994US-0231637]  
DT - US-P  
ACTE- 19940422 US/AE-A  
APPLICATION DATA (PATENT)  
{US 231637/94 19940422 [1994US-0231637]}  
- 19940617 US/AS02  
ASSIGNMENT OF ASSIGNOR'S INTEREST

3/4/03

RE 37,552

09/758631

UNIVERSITY OF SOUTHERN CALIFORNIA UNIVERSITY PARK LOS ANGELES, CA  
90089 \* SVENSSON, LARS : 19940520; ATHAS, WILLIAM C. : 19940520;  
KOLLER, JEFFREY G. : 19940520

- 19951205 US/A  
PATENT
- 19960709 US/CC  
CERTIFICATE OF CORRECTION
- 19980922 US/RF  
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Terms: patno=5473526 (Edit Search)

231637 (08) 5473526 December 5, 1995

UNITED STATES PATENT AND TRADEMARK OFFICE GRANTED PATENT  
**5473526**

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Link to Claims Section

December 5, 1995

System and method for power-efficient charging and discharging of a capacitive load from a single source

**REISSUE:** This Patent was reissued on Feb. 19, 2002 as Reissue Patent Re 37,552. Reissue Application filed Jan. 1, 2001 (O.G. Mar. 6, 2001) Ex. Gp.: 2838; Re. S.N. 09/758,631 Reissue Application filed Dec. 5, 1997 (O.G. Sep. 22, 1998) Ex. Gp.: 2838; Re. S.N. 08/986,327, (O.G. March 6, 2001)

**INVENTOR:** Svensson, Lars, Santa Monica, CA; Athas, William C., Redondo Beach, CA; Koller, Jeffrey G., Torrance, CA

**CERT-CORRECTION:** July 9, 1996 - a Certificate of Correction was issued for this Patent

**APPL-NO:** 231637 (08)

**FILED-DATE:** April 22, 1994

**GRANTED-DATE:** December 5, 1995

**ASSIGNEE-AT-ISSUE:** University of Southern California, Los Angeles, CA

**ASSIGNEE-AFTER-ISSUE:** June 17, 1994 - ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS)., UNIVERSITY OF SOUTHERN CALIFORNIA UNIVERSITY PARK LOS ANGELES, CA 90089, Reel and Frame Number: 007044/0586

May 29, 1996 - CONFIRMATORY LICENSE (SEE DOCUMENT FOR DETAILS)., DEFENSE, DEPARTMENT OF, UNITED STATES OF AMERICA ADVANCED RESEARCH PROJECTS A GENCY 3701 N. FAIRFAX DRIVE ARLINGTON VIRGINIA 22203, Reel and Frame Number: 007961/0829

**LEGAL-REP:** Benman, Collins & Sawyer

**PUB-TYPE:** December 5, 1995 - Utility Patent having no previously published pre-grant publication (A)

**PUB-COUNTRY:** United States (US)

**US-MAIN-CL:** 363#60

**US-ADDL-CL:** 307#109

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US 5,473,526

08/231637

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?us5473526/pn

\*\* SS 3: Results 1

Search statement 4

?prt fu legalall max

1/1 PLUSPAT - (C) QUESTEL-ORBIT- image

CPIM (C) Questel-Orbit

PN - US5473526 A 19951205 [US5473526]

TI - (A) System and method for power-efficient charging and discharging of a capacitive load from a single source

PA - (A) UNIV SOUTHERN CALIFORNIA (US)

PAO - University of Southern California, Los Angeles CA [US]

IN - (A) SVENSSON LARS (US); ATHAS WILLIAM C (US); KOLLER JEFFREY G (US)

AP - US23163794 19940422 [1994US-0231637]

PR - US23163794 19940422 [1994US-0231637]

IC - (A) H02M-003/07

EC - G05F-001/565

- H02M-003/07

- H02M-003/158

PCL - ORIGINAL (O) : 363060000; CROSS-REFERENCE (X) : 307109000

DT - Basic

CT - US3603898; US5095223; US5339236

STG - (A) United States patent

AB - A system and method for efficiently charging and discharging a capacitive load from a single voltage source. The system includes a first switch for selectively connecting the voltage source to the load and a second switch for selectively providing a short across the load as may be common in the art. A particularly novel aspect of the invention resides in the provision of plural capacitive elements and a switching mechanism for selectively connecting each of the capacitive elements to the load whereby the load is gradually charged or discharged. In the illustrative embodiment, the switching mechanism includes a set of switches for selectively connecting each of the capacitive elements to the capacitive load and a switch control mechanism for selectively activating the switches.

1/1 LGST - (C) LEGSTAT

PN - US 5473526 [US5473526]

AP - US 231637/94 19940422 [1994US-0231637]

DT - US-P

ACT - 19940422 US/AE-A

APPLICATION DATA (PATENT)

{US 231637/94 19940422 [1994US-0231637]}

- 19940617 US/AS02

ASSIGNMENT OF ASSIGNOR'S INTEREST

UNIVERSITY OF SOUTHERN CALIFORNIA UNIVERSITY PARK LOS ANGELES, CA

90089 \* SVENSSON, LARS : 19940520; ATHAS, WILLIAM C. : 19940520;

KOLLER, JEFFREY G. : 19940520

- 19951205 US/A

3/4/03

US 5,473,526

08/231637

PATENT  
- 19960709 US/CC  
CERTIFICATE OF CORRECTION  
- 19980922 US/RF  
REISSUE APPLICATION FILED  
971205  
- 20010306 US/RF  
REISSUE APPLICATION FILED  
20010101  
UP - 2001-10

1/1 CRXX - (C) CLAIMS/RRX  
AN - 2669778  
PN - 5,473,526 A 19951205 [US5473526]  
PA - Southern California, University of  
PT - E (Electrical)  
ACT - 19960529 REASSIGNED  
CONFIRMATORY LICENSE

Assignor: SOUTHERN CALIFORNIA, UNIVERSITY OF DATE SIGNED: 11/17/1994

Assignee: DEFENSE, DEPARTMENT OF, UNITED STATES OF AMERICA ADVANCED  
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Reel 007961/Frame 0829

Contact: ADVANCED RESEARCH PROJECTS AGENCY KAREN DELAP OFFICE OF  
GENERAL COUNSEL 3701 N. FAIRFAX DRIVE ARLINGTON, VA 22203

- 19971205 REISSUE REQUESTED  
ISSUE DATE OF O.G.: 19980922  
REISSUE REQUEST NUMBER: 08/986327  
EXAMINATION GROUP RESPONSIBLE FOR REISSUEPROCESS: 2838  
Reissue Patent Number: USRE37552  
  
- 20010101 REISSUE REQUESTED  
ISSUE DATE OF O.G.: 20010306  
REISSUE REQUEST NUMBER: 09/758631  
EXAMINATION GROUP RESPONSIBLE FOR REISSUEPROCESS: 2838

Reissue Patent Number:

UP - 1999-00  
UACT- 2001-03-06  
URAS- 2002-07-09

1/4 PAST - (C) Thomson Derwent  
AN - 200208-001530  
PN - 5473526 A [US5473526]  
DT - A (UTILITY)  
OG - 2002-02-19  
CO - RE  
ACT - REISSUE PATENT  
SH - REISSUE PATENT  
RL - USRE37552

3/4/03

US 5,473,526

08/231637

2/4 PAST - (C) Thomson Derwent  
AN - 200110-000902  
PN - 5473526 A [US5473526]  
DT - A (UTILITY)  
OG - 2001-03-06  
CO - REA  
ACT - REISSUE APPLICATION FILED  
SH - REISSUE APPLICATION FILED

3/4 PAST - (C) Thomson Derwent  
AN - 199838-001282  
PN - 5473526 A [US5473526]  
DT - A (UTILITY)  
OG - 1998-09-22  
CO - REA  
ACT - REISSUE APPLICATION FILED  
SH - REISSUE APPLICATION FILED

4/4 PAST - (C) Thomson Derwent  
AN - 199628-001248  
PN - 5473526 A [US5473526]  
DT - A (UTILITY)  
OG - 1996-07-09  
CO - COR  
ACT - CERTIFICATE OF CORRECTION  
SH - CERTIFICATE OF CORRECTION

Search statement 4

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Search statement 3

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1 Patent Groups  
\*\* SS 3: Results 2

Search statement 4

?famstate nonstop

1/2 INPADOC - (C) INPADOC  
PN - US 37552 E1 20020219 [US--37552]  
TI - SYSTEM AND METHOD FOR POWER-EFFICIENT CHARGING AND DISCHARGING OF A  
CAPACITIVE LOAD FROM A SINGLE SOURCE  
IN - SVENSSON LARS [SE]; ATHAS WILLIAM C [US]; KOLLER JEFFREY G [US]  
PA - UNIV SOUTHERN CALIFORNIA [US]  
AP - US 986327/97-A 19971205 [1997US-0986327]  
PR - US 986327/97-A 19971205 [1997US-0986327]  
- US 231637/94-A5 19940422 [1994US-0231637]  
IC - H02M-003/07

3/4/03

US 5,473,526

08/231637

2/2 INPADOC - (C) INPADOC

PN - US 5473526 A 19951205 [US5473526]

TI - SYSTEM AND METHOD FOR POWER-EFFICIENT CHARGING AND DISCHARGING OF A CAPACITIVE LOAD FROM A SINGLE SOURCE

IN - SVENSSON LARS [US]; ATHAS WILLIAM C [US]; KOLLER JEFFREY G [US]

PA - UNIV SOUTHERN CALIFORNIA [US]

AP - US 231637/94-A 19940422 [1994US-0231637]

PR - US 231637/94-A 19940422 [1994US-0231637]

IC - H02M-003/07

1/1 LEGALI - (C) LEGSTAT

PN - US 5473526 [US5473526]

AP - US 231637/94 19940422 [1994US-0231637]

DT - US-P

ACTE- 19940422 US/AE-A

APPLICATION DATA (PATENT)

{US 231637/94 19940422 [1994US-0231637]}

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KOLLER, JEFFREY G. : 19940520

- 19951205 US/A

PATENT

- 19960709 US/CC

CERTIFICATE OF CORRECTION

- 19980922 US/RF

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971205


- 20010306 US/RF

REISSUE APPLICATION FILED

20010101

UP - 2001-10

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